Table 1. Mean percentage (se) of *Curculio caryae* larvae infected with *Beauveria bassiana* isolates from soil in Southeastern pecan orchards (Assay 3, Trial 1)[a].

| | Days Post Inoculation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isolate | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Average[b] |
| Control | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 6.7±3.3a | 6.7±3.3a | 6.7±3.3a | 6.7±3.3a | 10.0±5.8a | 4.6±0.89bc |
| Mycotrol® | 0±0a | 0±0a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 1.54±0.59d |
| BbAR1 | 0±0a | 0±0a | 0±0a | 0±0a | 0±0a | 0±0a | 3.3±3.3a | 6.7±6.7a | 0.77±0.57d |
| BbGA1 | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 10.0±5.8a | 13.3±3.3a | 13.3±3.3a | 13.3±3.3a | 5.90±1.08b |
| BbGA2 | 13.3±3.3a | 13.3±3.3a | 13.3±3.3a | 13.3±3.3a | 13.3±3.3a | 13.3±3.3a | 13.3±3.3a | 16.7±6.7a | 9.74±1.19a |
| BbMS1 | 13.3±6.7a | 13.3±6.7a | 13.3±6.7a | 10.0±10.0a | 16.7±8.8a | 20.0±11.5a | 20.0±11.5a | 23.3±12.0a | 12.31±2.16a |
| BbMS2 | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 3.3±3.3a | 10.0±5.8a | 2.82±o.82cd |
| BbMS3 | 3.3±3.3a | 3.3±3.3a | 16.7±6.7a | 16.7±6.7a | 16.7±6.7a | 16.7±6.7a | 20.0±5.8a | 20.0±5.8a | 8.72±1.73ab |

[a] Numbers followed by different letters within each column are statistically different ($\alpha = 0.05$). No significant differences were detected 5-7 d post inoculation (data not shown).

[b] Average of observations 5-14 d post inoculation.

Table 2. Mean percentage (se) of *Curculio caryae* larvae infected with *Beauveria bassiana* isolates from soil in southeastern pecan orchards (Assay 3, trial 2)[a].

| | Days Post Inoculation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Isolate | 7 | 10 | 11 | 12 | 13 | 14 | 17 | Average[b] |
| Control | 3.3±3.3b | 6.7±6.7a | 6.7±6.7a | 6.7±6.7a | 6.7±6.7a | 6.7±6.7a | 16.0±12.0a | 6.1±1.7e |
| Mycotrol® | 3.3±3.3b | 13.3±13.3a | 16.7±12.0a | 23.3±13.3a | 23.3±13.3a | 26.7±12.0a | 26.7±12.0a | 13.3±3.0c |
| BbAR1 | 0±0b | 3.3±3.3a | 6.7±3.3a | 6.7±3.3a | 10.0±0a | 16.7±3.3a | 33.3±12.0a | 7.0±2.0de |
| BbGA1 | 0±0b | 6.7±6.7a | 6.7±6.7a | 16.7±8.8a | 26.7±8.8a | 36.7±8.8a | 46.7±13.3a | 12.7±3.3cd |
| BbGA2 | 13.3±3.3a | 23.3±8.8a | 23.3±8.8a | 30.0±5.8a | 33.3±3.3a | 33.3±3.3a | 60.0±5.8a | 23.3±3.0a |
| BbMS1 | 0±0b | 6.7±3.3a | 10.0±5.8a | 13.3±6.7a | 16.7±8.8a | 33.3±8.8a | 56.7±8.8a | 12.4±3.3cd |
| BbMS2 | 0±0b | 13.3±8.8a | 33.3±3.3a | 36.7±3.3a | 50.0±5.8a | 50.0±5.8a | 60.0±5.8a | 22.1±4.2b |
| BbMS3 | 6.7±3.3ab | 13.3±8.8a | 13.3±8.8a | 16.7±12.0a | 23.3±14.5a | 23.3±14.5a | 33.3±20.3a | 12.7±3.1c |

[a] Numbers followed by different letters within each column are statistically different ($\alpha = 0.05$). No significant differences were detected 5-6 d post inoculation (data not shown).

[b] Average of observations 5-17 d post inoculation.

Table 3. Mean percentage (±se) of *Curculio caryae* larvae infected with *Beauveria bassiana* or *Metarhizium anisopliae* isolates from soil in Southeastern US pecan orchards (Assay 4)[a].

| | Days Post Inoculation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Isolate | 5 | 6 | 7 | 8 | 12 | 13 | 14 | Average |
| Control | 4.0±2.6a | 5.7±2.6bc | 8.1±4.6bc | 9.8±5.0bc | 14.8±4.9cd | 16.4±5.5d | 22.1±5.1d | 11.5±1.8c |
| Mycotrol® | 1.7±1.7a | 3.3±3.3c | 3.3±3.3c | 3.3±3.3c | 10.7±5.2d | 15.7±6.1d | 25.7±12.4d | 9.5±32.5c |
| BbMS1 | 3.3±2.1a | 5.0±3.4bc | 6.7±4.9bc | 11.7±7bc | 34.8±12.3bc | 39.5±10.4c | 46.7±9.3bc | 21.1±3.9b |
| MaLA5 | 6.7±3.3a | 6.7±4.2bc | 12.4±4.8bc | 14.8±4.1ab | 33.8±10.9bc | 40.2±8.6bc | 46.7±8.6bc | 23.0±3.4b |
| MaLA7 | 3.3±2.1a | 5.0±3.1bc | 5.0±3.4c | 11.4±2.7bc | 51.0±7.0b | 60.7±9.2ab | 60.7±9.2abc | 28.2±4.5b |
| MaLA8 | 6.7±3.3a | 6.7±3.3bc | 6.7±3.3bc | 10.0±0abc | 30.0±0bc | 40.0±0bc | 50.0±0bc | 21.4±3.9b |
| MaLA6 | 1.7±1.7a | 10.0±6.3bc | 13.3±8.0bc | 19.0±8.6ab | 40.5±12.4b | 51.0±10.8bc | 54.3±12.3bc | 27.1±4.5b |
| BbLA1 | 1.7±1.7a | 5.7±2.6bc | 5.7±2.6bc | 10.7±5.2bc | 51.4±10.1b | 53.8±10.6bc | 64.3±8.3ab | 27.6±4.6b |

[a] Numbers followed by different letters within each column are statistically different ($\alpha = 0.05$).

Table 4. Mean percentage (se) of *Curculio caryae* larvae infected with *Beauveria bassiana* isolates from soil in Southeastern pecan orchards (Assay 5)[a].

| | Days Post Inoculation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isolate | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Average[b] |
| Control | 3.3±3.3.3c | 6.7±3.33bc | 13.3±3.3b | 16.7±3.3abc | 16.7±3.3bc | 16.7±3.3bc | 16.7±3.3b | 20.0±0.0c | 9.0±1.3d |
| Mycotrol® | 6.7±3.3bc | 6.7±3.3bc | 6.7±3.3bc | 6.7±3.3cd | 6.7±3.3cd | 20.0±5.8bc | 20.0±5.8b | 20.0±5.8c | 7.6±1.4 d |
| BbMS1 | 23.3±3.3a | 33.3± 8.8a | 40.0±5.8a | 40.0±5.8a | 46.7±8.8a | 53.33±6.7a | 56.7±3.3a | 73.3±13.3a | 32.6±3.3a |
| BbGA3 | 16.7±6.7ab | 16.7±6.7ab | 16.7±6.7ab | 16.7±6.7abc | 16.7±6.7bc | 16.7±6.7bc | 16.7±6.7b | 16.7±6.7c | 14.0±1.6 c |
| BbGA4 | 10.0±4.5abc | 8.3±4.8bc | 11.7±4.8bc | 16.7±4.9bc | 15.0±5.6bc | 18.3±6.0bc | 20.0±6.3b | 26.7±5.8bc | 10.7±1.4d |
| BbGA6 | 18.3±4.0ab | 18.3±4.01ab | 21.7±5.4ab | 25.0±5.6ab | 33.3±4.9ab | 41.7±5.4ab | 45.0±5.6a | 48.3±4.0b | 21.7±1.9 b |
| BbGA7 | 3.3±3.3c | 6.7±3.3bc | 6.7±3.3bc | 6.7±3.3cd | 6.7±3.3cd | 13.3±8.8c | 20.0±10.0b | 20.0±10.0c | 6.7± 1.5 d |
| BbGA8 | 0.0±0.0c | 0.0 ±0.0 c | 0.0±0.0c | 0.0± 0.0d | 0.0±0.0d | 0.0±0.0d | 0.0±0.0c | 0.0±0.0d | 0.0±0.0e |

[a] Numbers followed by different letters within each column are statistically different ($\alpha = 0.05$). No significant differences were detected 5-7 d post inoculation (data not shown).

[b] Average of observations 3-15 d post inoculation.

Table 5. Mean percentage (se) of *Curculio caryae* larvae infected with *Beauveria bassiana* or *Metarhizium anisopliae* isolates from soil in Southeastern pecan orchards (Assay 6)[a].

| | Days Post Inoculation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isolate | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Average[b] |
| Control | 16.7±12.0b | 16.7±12.0b | 20.0±11.6bc | 20.0±11.6bc | 20.0±11.6bcd | 20.0±11.6cd | 20.0±11.6cd | 23.3±14.5cd | 15.4± 2.6d |
| Mycotrol® | 23.3± 8.8ab | 26.7±6.7ab | 30.0±10.0ab | 36.7±8.8a | 46.7±12.0ab | 46.7±12.0bc | 46.7±12.0bc | 46.7±12.0bc | 28.2±3.4c |
| BbMS1 | 50.0±10.0a | 53.3±8.8a | 60.0±10.0a | 63.3±6.7a | 70.0±5.8a | 96.7±3.3a | 96.7±3.3a | 96.7±3.3a | 53.1±5.2a |
| BbLA2 | 20.0±5.8b | 30.0±11.5b | 30.0±11.6ab | 30.0±11.6ab | 33.3±8.8abc | 33.3±8.8bc | 33.3±8.8bcd | 33.3±8.8cd | 20.5±2.9d |
| BbLA3 | 33.3±3.3ab | 33.3±3.3ab | 53.3±12.0a | 53.3±12.0a | 53.3±12.0a | 70.0±15.3b | 73.3±12.0ab | 76.7±14.5ab | 42.1±4.2b |
| MaLA2 | 0.0±0.0c | 0.0±0.0c | 6.7±3.3bc | 10.0±5.8bc | 13.3±8.8cd | 16.7±8.8cd | 16.7±8.8d | 16.7±8.8cd | 6.2±1.7d |
| MaLA3 | 0.0±0.0c | 0.0±0.0c | 0.0±0.0c | 0.0±0.0c | 0.0±0.0d | 0.0±0.0d | 6.7±6.7cd | 6.7± 6.7d | 1.0±0.7d |

[a] Numbers followed by different letters within each column are statistically different ($\alpha = 0.05$). No significant differences were detected between the control and fungal isolates 5-7 d post inoculation (data not shown).

[b] Average of observations 3-14 d post inoculation.

Table 6. Mean percentage (±se) mortality of *Curculio caryae* larvae following exposure to *Metarhizium anisopliae* culture MaLA4.

| | Days Post Inoculation | | | | | |
|---|---|---|---|---|---|---|
| Isolate | 6 | 9 | 12 | 16 | 19 | Average |
| Control | 6.7±3.3a | 13.3±3.3a | 13.3±3.3a | 23.3±3.3a | 23.3±3.3b | 16.0±2.1a |
| Ma | 3.3±3.3a | 10.0±3.4a | 23.3±3.3a | 56.7±6.7a | 70.0±5.8a | 32.7±7.3a |

Control= no fungus applied, Ma=*M. anisopliae* culture MaLA4. Numbers followed by different letters within each column are statistically different ($\alpha = 0.05$, LSD). Rate of application was ca. 79,500 conidia per $cm^2$.

Table 7. Fall armyworm larval mortality following exposure to fungal strains of *Beauveria bassiana* and *Metarhizium anisopliae*.

| Fungus | Strain | First Instar Corrected % Mortality | Third Instar Corrected % Mortality |
|---|---|---|---|
| *B. bassiana* | 30601 | 94.3% | 85.9% |
| | 30593 | 90.6% | 82.6% |
| | 30600 | 83.0% | 80.7% |
| | GHA | 90.6% | 87.7% |
| *M. anisopliae* | 30594 | 84.9% | 82.6% |